

Claims

1. A connector pair for attaching a medical implant to a delivery device, the connector pair comprising,
a substantially rigid closed loop connector located at an end of a medical implant,
and
a slotted connector formed in a distal end of a shaft of a delivery device for interfitting with the closed loop connector of the medical implant, the slotted connector including first and second legs, the first leg extending radially into the shaft and the second leg extending axially in a distal direction along the shaft.
2. The connector pair of claim 1, wherein the closed loop connector is shaped to track the distal end of the shaft.
3. The connector pair of claim 1, wherein the closed loop connector includes a base portion, a tapered portion and a loop portion, the base portion extending from the end of the medical implant to the tapered portion, the tapered portion tapering radially outward and extending axially from the based portion to the loop portion, the loop portion being curved.
4. The connector pair of claim 3, wherein the distal end of the shaft is tapered to for interfitting with the tapered portion of the closed loop connector.
5. The connector pair of claim 1, wherein the slotted connector includes first and second channels, located substantially diametrically opposite each other in the distal end of the shaft and extending distally from the second leg of the slotted connector.
6. The connector pair of claim 5, wherein the tapered portion of the closed loop connector is sized to snap fit into and track the first and second channels in the distal end of the shaft.
7. The connector pair of claim 1, wherein the closed loop connector and the slotted connector are sized for end to end interconnection between the medical implant and the shaft of the delivery device.
8. The connector pair of claim 1, wherein the closed loop connector interfits within the second leg of the slotted connector.
9. A connector pair for attaching a medical implant to a delivery device, the connector pair comprising,

a closed loop connector located at an end of a medical implant, and
a slotted connector formed in a distal end of a shaft of a delivery device for interfitting with the closed loop connector of the medical implant, the slotted connector including first and second legs, the first leg extending radially into the shaft and the second leg extending axially in a distal direction along the shaft and includes a narrowing for locking the looped connector into the second leg.

10. The connector pair of claim 9, wherein the second leg of the slotted connector is longer than the first leg of the slotted connector.

11. The connector pair of claim 9, wherein the second leg of the slotted connector extends distally at about a 90 degree angle relative to the first leg of the slotted connector.

12. The connector pair of claim 9, wherein the narrowing is formed where the second leg initially extends from the first leg.

13. The connector pair of claim 9, wherein the second leg at the narrowing has a width of less than that of the loop portion of the closed loop connector.

14. The connector pair of claim 9, wherein the narrowing includes protuberance in a wall of the second leg.

15. The connector pair of claim 14, wherein the protuberance forms a substantially flat shoulder facing a distal most end of the shaft.

16. A connector pair for attaching a medical implant to a delivery device, the connector pair comprising,

a closed loop connector located at an end of a medical implant, and
a slotted connector formed in a distal end of a shaft of a delivery device for interfitting with the closed loop connector of the medical implant, the slotted connector including first and second legs, the first leg extending radially into the shaft and the second leg extending axially in a distal direction along the shaft, wherein the second leg is substantially spherical in shape having an opening for accepting the looped connector at an intersection with the first leg.

17. The connector pair of claim 16, wherein the opening in the second leg has a width of less than that of the loop portion of the closed loop connector.

18. A connector pair for attaching a medical implant to a delivery device, the connector pair comprising,

a closed loop connector located at an end of a medical implant, and
a slotted connector formed in a distal end of a shaft of a delivery device for interfitting with the closed loop connector of the medical implant, the slotted connector including first and second legs, the first leg extending radially into the shaft and the second slot extending axially in a distal direction along the shaft, wherein the second leg includes a curved portion.

19. The connector pair of claim 18, wherein the second leg includes a narrowing for locking the looped connector into the second leg.

20. The connector pair of claim 19, wherein the narrowing is formed where the second leg initially extends from the first leg.

21. A connector pair for attaching a medical implant to a delivery device, the connector pair comprising,

a closed loop connector located at an end of a medical implant,
a slotted connector formed in a distal end of a shaft of a delivery device for interfitting with the closed loop connector of the medical implant, the slotted connector including first and second legs, the first leg extending radially into the shaft and the second slot extending axially in a distal direction along the shaft, and
a freely slidable tubular sleeve on the shaft for sliding over and covering the slotted connector subsequent to interfitting the closed loop connector with the slotted connector.

22. The connector pair of claim 21, wherein the closed loop material is formed from a semi-flexible, shape retaining material.

23. The connector pair of claim 21, wherein the closed loop connector is formed from a suturing material.

24. The connector pair of claim 21, wherein the freely slidable tubular sleeve extends past the base portion of the closed loop connector onto the end of the medical implant.

25. The connector pair of claim 21, wherein the freely slidable tubular sleeve includes an aperture for aligning with the first leg of the slotted connector during interfitting of with the closed loop connector.

26. The connector pair of claim 21, wherein the freely slidable tubular sleeve is sized relative to the shaft so that it slides over the slotted connector in response to the shaft being withdrawing from a body of a patient.
27. A connector pair for attaching a medical implant to a delivery device, the connector pair comprising,
- a closed loop connector located at an end of a medical implant, and
 - a slotted connector formed in a distal end of a shaft of a delivery device for interfitting with the closed loop connector of the medical implant, the slotted connector extending into a the shaft from a first location to a second location, the second location being least as distal along the shaft as the first location, the slotted connector including a narrowing.
28. The connector pair of claim 27, wherein at the narrowing the slotted connector has a width of less than that of the loop portion of the closed loop connector.
29. The connector pair of clam 27, wherein the narrowing includes protuberance in a wall of the slotted connector.
30. The connector pair of claim 27, wherein the narrowing includes a first protuberance in a first wall of the slotted connector and a second protuberance in a second wall of the slotted connector.
31. The connector pair of claim 30, wherein the protuberances are axially aligned relative to each other.
32. The connector pair of claim 30, wherein the protuberances are axially offset relative to each other.
33. The connector pair of claim 27, wherein the narrowing forms an inward facing shoulder in the slotted connector.
34. The connector pair of claim 33, wherein the inward facing shoulder is substantially flat.
35. The connector pair of claim 27, wherein the closed loop connector is substantially triangular in shape.
36. The connector pair of claim 27, wherein the slotted connector is curved.
37. A connector pair for attaching a medical implant to a delivery device, the connector pair comprising,

an adjustable size closed loop connector located at an end of a medical implant,
and

a slotted connector formed in a distal end of a shaft of a delivery device for interfitting with the closed loop connector of the medical implant, the slotted connector extending into a the shaft from a first location to a second location, the second location being least as distal along the shaft as the first location.

38. The connector pair of claim 37, wherein the closed loop connector includes a filament for forming a the closed loop, and a housing through which the closed loop extends in a first direction and first and second ends of the filament extend in a second direction.

39. The connector pair of claim 37, wherein at least of one of the first and second ends of the filament slidably interfit with the closed loop connector housing such that it may be actuated to constrict the size of closed loop.

40. The connector pair of claim 39, wherein both of the first and second ends of the filament slidably interfit with the closed loop connector housing such that they may be actuated to constrict the size of closed loop.

41. The connector pair of claim 39 wherein, the housing includes a locking mechanism for locking the filament in place to control the size of the closed loop.

42. The connector pair of claim 41, wherein the locking mechanism includes teeth for engaging the filament.

43. The connector pair of claim 41, wherein the housing includes an unlocking mechanism for enabling at least one of expansion and constriction of the closed loop.

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